SLUG NEWSLETTER

sinclair LOUISVILLE USERS GROUP

06/09/88

The Sinclair Louisville User Group meeting came to order on Wednesday, May 11, 1988 at 7:30 PM at the Government Center on Outer Loop road. Again, time has crept up faster than expected and this is a last minute secretarys report.

Several of us at the meeting discussed the Cleveland users group meet and whether or not we will go. This meeting has grown in size to two full days that would require an overnite stay. There are no motels at the meet site so driving or cabs would be needed. I don't know whether or not I will attend since my summertime computer activities slow to a crawl.

Jim Pitts demoed his 80 column thermal printer that B.G. Micro has been selling. This printer was originally sold by IBM for the PC Jr. (HA,HA) and is a serial I/F with full graphics capabilities if you can ever figure out how to access them. The print quality is very nice, but 8" wide thermal paper may be diffucult to find. If you get Computer Shopper magazine you can find B.G. Micro add inside where they list the price as $29.95 + $4.00 shipping and handling. It even has a built in self test feature. A few of the club members have already ordered theirs.

Speaking of printers, I recently received a catalog that had combination printer buffers/switchers for a very reasonable price. I wish I could remember the name of the place because I can't find the catalog now. The prices for parallel buffers with two printer/computer switching was $89.95 for a 64K unit and $139.95 for a 256K unit. Not bad, heh. I immediatly placed an order for the 256K one and was promptly (but nicely) told they were sold out and they didn't know if they would ever have them again at that price. Understandably. So, I ordered the 64K unit and am now waiting for it to arrive. No more waiting for the printer to finish and I'll be able to use my 2068 and QL with my good dot matrix printer just by pushing a button. Soon, I hope. I will try to locate the catalog in my stacks of magazines and write up a review of the printer buffer/switcher when I get it.

We SLUG members need to get ALL our software titles that we have for our particular machines and make a list so we can compile a library reference. If you do this, say what format it is on (tape, disk format, mdv, etc.), and write a brief description of what the program is (game, disk utility, etc.), and a brief description of what it does (shoot the asteroids, disk catalog, etc.). If and when you might do this, give your lists to Ed Radtke and/or John Hamilton. I have not done this yet so I'm as guilty as the rest of us <grin>.

The meeting came to a close at approximately 21:30 hours.

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M337T	.50	LM1889	1.29
M339	.40	ULN2003	.59
M348	.49	ULN2068	.59
M358	.25	ULN2074	.75
M384	.59	LM2917	.50
M386	.59	CA3146	.75
M393	.40	CA3183	.49
E555	.22	3341	.75
E556	.40	MC3403	2/.99
E558	.75	MC3486	.75
E564	1.29	DS3632	.39
E567	.49	MC4024P	2.29
E570	2.25	UA4136	.59
E592	.69	4558	.40
M723	.35	MC4741	2/.99
M733	.49	MM5395	1.25
M747	.49	DS8835	1.50
M771	.25	DS8837	1.40
C1350	.89		

MISCELLANEOUS

51	2.49
12901	1.55
12907	1.75
12909	1.65
12911	1.75
12964	4.50
29701	.70
29705	.75
31LO1	1.75
5B	.20
0	.49
1	.49
8	.70
47218C	2.25
47218D	2.25
2903	.50
2912	4.95
8	3.75
6	2.00
1	3.50
C08CN	1.79
C 800	2.50
3 FIFO	2.25

LTAGE REGULATORS

317K	1.40
317T	.50
337T	.50
	.35
5T	.35
8T	.50
2K	1.00
2T	.40
5T	.40
2K	.50
U1C (T)	.50

SOCKETS

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6 Pin	14/1.00
8 Pin	13/1.00
4 Pin	13/1.00
6 Pin	13/1.00
8 Pin	13/1.00
0 Pin	13/1.00

DIP SWITCHES

2 Position	.35
4 Position	.40
5 Position	
6 Position	
7 Position	
8 Position	.60
10 Position	.65
12 Position	.75

B.G. Micro Proudly Announces

"The Oscar"

(Optical Scanning Reader)

Another B.G. Exclusive

This low cost bar code reader interprets 12 of the most common popular bar codes including Code 39, Code 11, 2 of 5, I 2 of 5 times, Codabar, UPC-A, UPC-E, EAN 8 and EAN 13.

"The Oscar" can hold up to 500 characters in memory. Your data can then be easily dumped into your computer via the RS232 interface (supplied).

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Very Limited Quantity

Ridiculously Low Priced **$99.95**

Barcode Printing Program - UPC or Code 39 ..... $42.50
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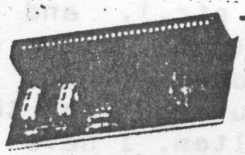


TEXT TO SPEECH POWER SUPPLY

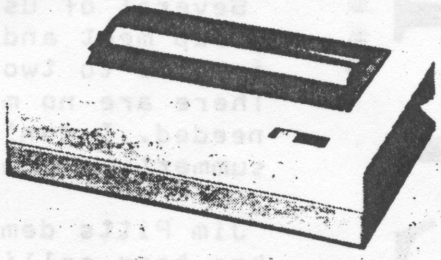
Mother Board full? Now run your text to speech board independent of your computer power supply. Comes assembled and tested. Just plug the supply in — insert the board into the bus connector and you are in business. No need to disturb your present board configuration inside your computer. Power supply board measures 2" x 4" and plug-in transformer keeps everything neat and tidy. Power supply can also be used to

Ram Tester Under $100.00

Call or Write for Information

PC-XT COMPATIBLE PRINTER BONANZA

MOVIN' 'EM OUT!



Manufactured by Canon - Original List Price $199.00
Originally Manufactured For The PC JR

ABSOLUTELY ONE OF THE BEST DEALS WE HAVE EVER OFFERED. WE GOT THESE FROM A VERY LARGE AMERICAN OEM.

THIS COMPACT PRINTER (WIDTH 12.3" x DEPTH 8.7" x HEIGHT 3.5") OFFERS STANDARD ASCII, 96 CHARACTERS, UPPER CASE AND LOWER CASE. IT HAS FOUR PRINT MODES:

STANDARD - 80 CPL
COMPRESSED - 136 CPL
DOUBLE WIDTH - 40 CPL
COMPRESSED DOUBLE WIDTH - 66 CPL

THE 5 x 8 DOT MATRIX, 50 CPS SUPER PRINTER CAN ALSO UNDERLINE, DOES GRAPHICS, DRAWS SPECIAL CHARACTERS UNDER PROGRAM CONTROL, AND EVEN HAS AN EXTENDED CHARACTER SET FOR INTERNATIONAL LANGUAGES.

THIS SERIAL PRINTER ALSO USES VERY INEXPENSIVE THERMAL PAPER. WORKS WITH PC JR., PC, XT, AT, CLONES AND MANY MORE.

BRAND NEW IN BOX!! **$29.95** +$4.00 Shipping and Handling
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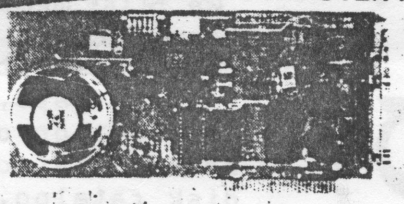
GROUP SPECIAL **4/$105.00**

Optional: For PC, XT, AT, or Clone, Add $3.00 For Connector.

TEXT TO SPEECH BOARD!

PC ... YOUR COMPUTER TALK!

PRICE CUT



A VERY POWERFUL AND AMAZING SPEECH CARD. USES THE NEW GENERAL INSTRUMENTS SPO256-AL2 SPEECH CHIP AND THE CTS256A-AL2 TEXT TO SPEECH CONVERTER.

THIS BOARD USES ONE SLOT ON THE MOTHERBOARD AND REQUIRES A COM SERIAL PORT. BOARD MAY ALSO BE USED IN A STAND ALONE ENVIRONMENT (EXTERNAL POWER SUPPLY) WITH ALMOST ANY COMPUTER THAT HAS A RS232 SERIAL PORT. TO USE THE BOARD IT IS ONLY NECESSARY TO SEND ENGLISH TEXT TO THE RS232 INPUT ON THE BOARD. THE BOARD INCLUDES A 1500 BYTE TEXT BUFFER AND HANDSHAKE LINE TO ALLOW YOU TO SEND DATA TO THE BOARD; THE SAME AS YOU WOULD SEND DATA TO AN RS232 SERIAL PRINTER. YOU CAN SET UP BATCH FILES THAT WILL MAKE YOUR COMPUTER GREET YOU WITH "GOOD MORNING MASTER," ETC. EVERY TIME YOU TURN IT ON.

DEMONSTRATION SOFTWARE AND A LIBRARY BUILDING PROGRAM ARE INCLUDED ON A 5¼ INCH PC/XT DISKETTE. FULL

NEW PRICES! NEW PRICES! NEW PRICES! NEW PRICES!

The ADAM Scene, June 1988
by Shawn Merrick

Recently, a message on CompuServe stated that COLECO is going bankrupt. For many of us ADAM owners, that is a triumphant end to the company that continued to make Cabbage Patch Kids (tm, for a short while longer), and drop all their computer support. I think they are getting what they deserve. After all, they could have made tremendous amounts of money if they had merely provided software support when the ADAM went on clearance. When they pulled the rug out from under us, we got right back up. Since 1985, several third party businesses have given us BETTER hardware, software, and service than COLECO would. As we bid COLECO farewell, we share a pleasant smile, and a spiteful laugh.

Here is some interesting information that all ADAM owners should place with their SmartBASIC manual. This information summarizes an 11-page memo that COLECO provided when their technical support number was active. I recall asking them how to use the graphic sprite features. After they said it was impossible in BASIC (not totally true), they sent me a technical bulletin with other features. I imagine very few of the people that own an ADAM now have had opportunity for these updates:

SUMMARY OF (PAGE #)

(PAGE 1) RANDOMIZE NUMBERS

The SmartBASIC RND function returns a number greater than 1 and less than or equal to zero. It follows the ANSI standard that each time a program is RUN, the same sequence of numbers occur. However, this is different from AppleSoft BASIC which provides a different sequence every RUN. If you require new sequences, it is suggested to write a routine to time a joystick keypress and use that as a seed in the RND.

```
10 PRINT "Press # on joystick keypad"
20 rx=rx-1:IF NOT PDL(11) THEN 20
30 n=RND(rx)
```

(PAGE 2) DIVIDING BY 100

ADAM's "Mathpack" does its arithmetic in binary and translates it to decimal. All such mathpacks have difficulty converting numbers divided by 100, so programmers write algorithms to force the "expected" answer. A few oversights still exist. If you divide numbers above 8191 by 100, you probably will get an answer with many trailing decimals. 8192/100 will not give 81.92 Instead, it answers 81.919999999 Here is a routine to check for the problem, convert it to a string, and insert a decimal point.

```
10 INPUT "Number you wish to divide by 100";n
15 REM  Check to see if it is a problem
20 IF n > 8191 and LEN(STR$(n/100)) > LEN(STR$(n+1)) then
GOSUB 1000 : PRINT n$ : GOTO 40
```

```
25 REM  Number is ok, so divide it
30 PRINT n/100
40 END
900 REM  Number needs conversion to string
1000 n$ = LEFT$(STR$(n),LEN(STR$(n))-2) + "." +
RIGHT$(STR$(n),2)
1010 RETURN
```

(PAGES 10+11) CLOSING DATA FILES

As with AppleSoft BASIC, SmartBASIC uses PRINT CHR$(4) as a signal to change the I/O status for data files. Also, CHR$(4) can be used to print a heart shape on the screen. Therefore, PRINT CHR$(4) is only interpreted as I/O when the cursor is on the left margin of the screen. When accessing files, place an HTAB 1 or PRINT CHR$(13) before the PRINT CHR$(4) instruction.

Each time ADAM uses INPUT from a data file, a question mark is printed on the screen (and printer, if active). You can add a PRINT CHR$(8) after the INPUT statement to erase the question marks.

An example of writing a sequential file:

```
5 d$ = CHR$(4)
10 REM  Read DATA to put in file
20 FOR x = 1 TO 10
30 READ stuff$(x)
40 NEXT x
100 REM  Write it in file called GAMES
110 HTAB 1 : PRINT d$:"Open GAMES"
120 HTAB 1 : PRINT d$:"Write GAMES"
130 For x = 1 TO 10 : PRINT stuff$(x) : NEXT x
160 HTAB 1 : PRINT d$;"Close GAMES"
1000 DATA Buck Rogers, Zaxxon, Donkey Kong, Tarzan,
Choplifter, Star Trek, AE, Congo Bongo, Telly Turtle,
Dragon's Lair
```

A program to read the file:

```
5 d$ = CHR$(13)+CHR$(4)
110 PRINT d$;"Open GAMES"
120 PRINT d$;"Read GAMES"
130 FOR x = 1 to 10
140 INPUT stuff$(x) : PRINT CHR$(8);
150 NEXT x
160 PRINT d$;"Close GAMES"
170 REM Print it out on the screen!
180 FOR x = 1 TO 10 : PRINT stuff$(x) : NEXT x
```

Notice that the WRITE program uses an HTAB fix, and the READ uses a carriage return fix. You can use either solution.

Next issue, I will include more information from the memo. We may even get into music and sound from SmartBASIC.

TASWORD-2050/RS-232 Modification

by Jim Pitts S.L.U.G.

If you own a serial printer which will run at 1200 baud then you may find this article of interest. Recently, I modified my TASWORD word processer to drive the 2050 modem/RS232 interface into the PC JR. printer. The PC JR. printer is available for a mere $30!!. There are few clues in the TASWORD manual however, there is reference to use with the COBRA 232 I/O Port. This led me to the appropriate addresses for this serial driver sub-routine. I saved this code to tape, making sure that I had several bytes before and after the routine. Then I loaded the ZEUS Disassembler/ Monitor program. I reloaded the TASWORD code into its original location and disassembled it to my 2040 printer. It was apparent that the portion of the code from E200 to E20A was the initiallization procedure for the COBRA UART, (whatever that device may be). Now, my understanding of the set up proceedure for 8251 UART chip in the 2050 Modem led me to believe that at least four set up bytes would have to be sent to the device. I decided that it would be better to set up the UART for the proper parameters from basic and to skip this section of code. Instead I substituted a carriage return and line feed into TASWORDs initialization code. I then changed the addresses to match those used by the 2050 board, ie. 119=Control and 115=Data. Some of the code used in the printer driver routine (E219 to E241) was also deleted. Deleted bytes were E224 to E236. This routine was also modified for I/O address compatibility with the 2050 modem board.
Of course if you are not the programming type this will mean little to you so here is how to do it without all the explanation:

1. Load in your copy of TASWORD. Symbol Shift A to get to the option page. Select option "b" to go to BASIC.
2. Type in new BASIC lines 8 and 9 as shown in the listing.
3. As an additional option you can type in line 8000 which is a little routine which can be run from BASIC to test your printer connections with a simple GOTO 8000 command.
4. Run the program, then get back out of it using the proceedure in step 1.
5. You may now delete line 9. Run the program again, return to the option page and select "g" for the graphics/printer facility. Define the interface control codes as follows:

   Interface control code 1: 0
   code 2: 0
   code 3: 0
   code 4: 64736

6. Get back to the option page and save your modified version of TASWORD.

MORE →

That's all there is to it unless you want to set up the graphics keys for special printer control functions. Those functions are going to be specific to your particular printer and depend on your choice of which control functions you want to access. By the way, this article was produced on the described set up. Not bad for so little money!

Here are some PC JR. Printer Modes:

Double Width mode

Compressed mode

Double Width Compressed mode

```
  8 OUT 119,0: OUT 119,0: OUT 1
19,0: OUT 119,64: OUT 119,78: OU
T 119,51
  9 FOR i=57892 TO 57911: POKE
i,0: NEXT i: POKE 57857,115: POK
E 57860,13: POKE 57864,10: POKE
57884,119: POKE 57913,115
  10 CLS : LET a=USR VAL "64330"
: GO TO VAL "20"
  11 FOR i=VAL "1" TO VAL "9": B
EEP VAL ".2",VAL "3": BEEP VAL "
.3",VAL "2": NEXT i: RETURN
  15 POKE VAL "23609",VAL "2": C
LEAR VAL "33279": GO SUB VAL "40
00": PRINT AT VAL "10",VAL "5";
FLASH VAL "1";"Do NOT stop the t
ape";AT VAL "1",VAL "0": LOAD "t
asword"CODE : CLS : PRINT AT VAL
 "10",VAL "6"; FLASH VAL "1";"St
op the tape": GO SUB VAL "11": L
ET a=USR VAL "59081": GO TO VAL
"10"
```

← change to "8"

```
8000>FOR i=32 TO 122: OUT 115,i:
 NEXT i: OUT 115,13: PAUSE 15: O
UT 115,10
```

A ZX PIPE DREAM

Jim Pitts

The buzz is that Fred Nachbaur, the ZX guru, is contemplating designing a ZX compatible computer. Just imagine, what would you change or add to this great little machine if you had the chance to do it ? Let me throw a few of my ideas.

MORE FULLY DECODED I/O - Incomplete decoding of the I/O ports makes for problems in peripheral compatibility.

SOUND - The lack of sound capability is a serious drawback of the ZX81. Use of a multi-channel sound chip would be preferred so that the CPU would not be tied up during the sound function.

INTERRUPT SERVICING - The present ZX video system fully prohibits the use of interrupts by peripherals.

HIGH RESOLUTION VIDEO - I really do not care about color, but there are many who do. HiRes like WRx16 should be built in. There should be the option ,however of using the standard ZX video system for program compatibility.

USER DEFINED GRAPHICS - needed for greater flexibilty. Putting the character set in RAM instead of ROM might be enough. As a matter of fact, why not copy the whole ROM into RAM and running from there. Just think, you could play with the operating system to your hearts content.

ON BOARD 64K - Please get rid of RamPacks.

MONITOR OUTPUT - Cheap and easy composite video.

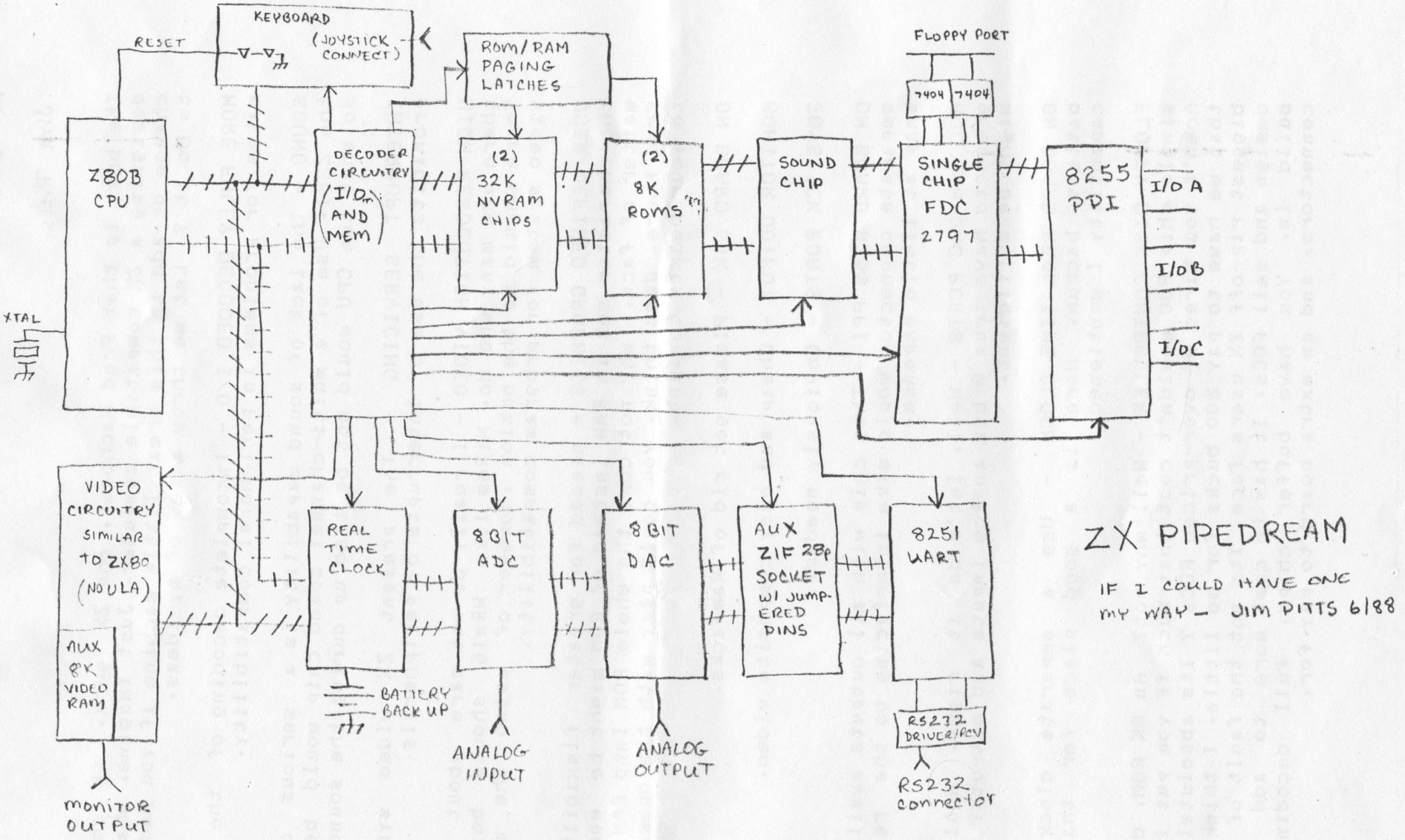
JOYSTICK PORTS - Obviously needed.

ON BOARD 8255 PPI - This chip with all outputs available via a separate connector would make interfacing to the real world a snap at little expense.

ADC and DAC PORTS - Well, let's do it right. Wouldn't it be great to have true 8 bit analog inputs and outputs? One of each might be sufficient.

ON BOARD REAL TIME CLOCK - Use a separate clock chip with battery backup. Here is a good place for that interrupt capability I mentioned.

FLOPPY DISK CONTROLLER - Well why not? An 8K ROM, driver, and a single chip FDC wouldn't cost that much if you put it on board. Aren't you tired of over-priced FDCs ? Its absolutely ridiculous that we have to pay 200 bucks for so little. I think this is the biggest rip-off ZX users face. Its not the fault of those that design and sell FDCs. It has to cost more to add on than to build in. You have buffer chips, full decoding schemes, connectors, and an extra board to pay for.



ZX PIPEDREAM

IF I COULD HAVE ONE MY WAY — JIM PITTS 6/88

BETTER BASIC - Now let me first say that Sinclair Basic is great! It has the best string handling routine available. Its easy to learn and implement. Still, we need all those functions available to 2068 users to make it absolutely optimal. How do you do this and still make it software compatible with old ZX programs? Perhaps, an alternate ROM, or the ROM in RAM system is in order.

APPLE STYLE MOTHERBOARD - Built in expansion slots, easy access.

KEYBOARD IMPROVEMENTS - Detachable typewriter style keyboard. Single stroke Function, Edit, and Delete keys. Two reset keys, both of which have to pressed to reset the machine. Basic program not eliminated by reset. Break key which can even stop machine code programs by use of a interrupt.

BETTER CHIPS - Non-volatile RAM. Z80B CPU. 74HCT chips for low current drain.

RS232 and CENTRONICS PRINTER PORTS - Maybe as an option. The 8255 could be used for the Centronics port, however a UART such as the 8251 would be needed for the serial port.

28p MULTI-USE ZIF SOCKET - Easy use of program ROMs, possible application as a EPROM programmer.

How big would such a computer be? I don't know but certainly not doorstop size. How much would it cost? You could make that a matter of choice to some extent. Many of the chips could be left off the board and these features added by the user simply by inserting additional components into the approriate locations. Personally I would be willing to pay about $100 for a bare board and the operating system ROMs. If the entire project cost less than $300 then I for one would snatch it up. This would be a savings when you count up how much all those features would cost when purchased as add-ons. Well Fred, have I scared you off?

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40218 2364

'I'll Just Be a Minute.'

JUNE

SU	MO	TU	WE	TH	FR	SA
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

****

JULY

SU	MO	TU	WE	TH	FR	SA
					1	2
3	4	5	6	7	8	9
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31						

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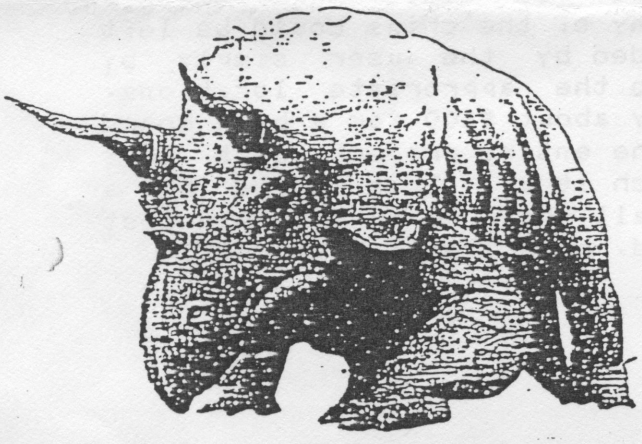
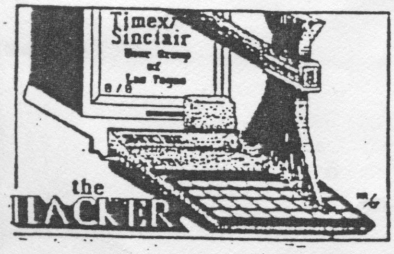
DON'T BE A BONEHEAD





COMPUTER VIRUS HITS SINCLAIR FAMILY

An article appeared in the April 88 issue of CTM magazine and the May 88 issue of the PLOTTER titled "DOC My computer has a VIRUS". It appears that a few smart hackers found something to do besides invade others peoples computers via modem and AT&T. The are now selling programs on the open market that do you in because the programs include a regenerating MC program within a good utility program. Or maybe you copy a program from a BBS. It is a great one that does almost everything. BUT after using the program periodically, the computer starts acting up. Before this you have made a few copies for friends. Their systems also begin to malfunction.

Here is how the little bug got in. It starts in a utility called COMMAND .COMM. It operates first when you ask for a directory. It makes copies of itself and increments a counter. Bingo, now it has multiplied and it starts writing zeros into the sector at the beginning of the disk that includes the directory space. So you have saved a couple of copies of COMMAND. COMM for files and they do the same thing. Just think that could be damaged by this slick program on various discs or even cassettes and even hard drives

For most of the T/S users' this would not seem to be a problem except that we do buy programs and do obtain them from BBS's. Thus we could be giving sanctuary to such a program.

If you suspect a problem, just check with PRINT FREE immediately after power-up, and then after loading the program and removing it with CLEAR : DELETE, just make another PRINT FREE. If there is a difference between these two numbers, then you do have a problem. John Oliger goes into detail on how to clean up this problem in the April UP-DATE magazine. The library has a copy if your interested. Our thanks to the PLOTTER for this information.

SINCUS NEWS

January 1988

PRINTER PROGRAMMING

- OR -

Adapting Software to Printers

The article about printer control in the October issue brought forth enough response to indicate that a more comprehensive reference should be attempted. Apparantly many users are having problems in this area. One nice Lady wrote her thanks, and several Gents wanted more information. But John Oliger wrote and pointed out a couple of mistakes. These will be corrected in the text of the following.

Why doesn't software writers include enough programming to make the software print "right out of the box" with ALL TYPES of printers? Well, that would be nice, but would likely require about 38K of programming, and our TS-2068 has only 38K of FREE memory to start with. So, usually a software is designed to print with a type of printer that is "compatable with" several brands, and instructions given to make program line changes to adapt to other printers. There are several DOT MATRIX printer brands that use the "EPSON STANDARD", which usually means that the printer maker copied the Epson "Control Codes". Two "Standards" widely used with Daisy Wheel printers are "QUEME Compatable" and "DIABLO Compatable".

In order for a computer to communicate with a printer, both devices must understand a common language. That common language is called ASCII (American Standard Code for Informaton Interchange). Page number 239 of the TS-2068 User manual gives the ASCII Codes and calls them "The Character Set". Actually there are more codes in ASCII than the TS-2068 uses, and a few of the codes in the TS-2068 CHR SET are not standard ASCII, but for printer control, the codes in the User Manual will suffice.

So, we have the "common language", which is ASCII. The computer understands it and so does the printer. Now there are two jobs that the printer must do. One is to PRINT CHARACTERS, and the other is to SWITCH its own modes of printing. To PRINT characters the printer must be able to receive and to respond rapidly to "streams of characters" sent by the computer. The charcters are processed by a "printer driver", a machine language software that is supplied by the manufacturer of the "PRINTER INTERFACE". Since the TS-2068 contains only a printer driver for the little TS-2040 printer, ALL interfaces for large printers are supplied by our Cottage Industries. Some of these are "Serial Interfaces", but most are CENTRONICS PARALLEL interfaces.

We will delay the discussion of Serial (RS-232) interfaces until the next issue of UP-DATE. For this discussion we will deal only with CENTRONICS PARALLEL interfaces, and only with the OLIGER and AERCO interfaces. These two "CPI" devices have become the dominant ones for the TS-2068, the most simple to use, and they use a minimal amount of computer memory for their printer driver code. In fact, the Disk Drive controller hardware contains the printer driver code in its EPROM, thus using no computer memory at all. These interfaces provide the electronics circuitry to process character streams and coded directions to a printer and to RECEIVE the "interrupt signals" from the printer.

The software "driver code" is an extension of the TS-2068 ROM, which lacks the "built in instructions" necessary to send data and commands to the printer. While the Oliger and Aerco CPI interfaces are different in circuitry, the driver codes supplied with each can be used with the other interface. Now lets get to the two functions of these CPI interfaces. One function, and the most complicated, is the processing of Character streams to the printer. Actually this is the most simple to use. <LPRINT> does it! You dont see the many complicated functions that take place, and you dont have to worry about it.

The other CPI function is to "Process Control Codes to the Printer", to make it do such things as Change from Elite Style to Pica Style, Roll up a Page, or the other mechanical functions that the printer does. The interface uses "OUT PORT 127" as the communications path to the printer, and the path back from the printer for "interrupts". So, the "ASCII COMMAND" that a printer needs to do a desired function is sent "OUT through PORT 127". A typical direct command to click up a line space is <OUT 127,10>. "10 decimal" is the industry standard ASCII CODE for printers to perform a LINE FEED. There are 32 "single character codes", 0 through 31, in the TS-2068 Character set that can be "sent out" in this manner.

Actually there are 255 character codes that can be sent out to the printer, but only 32 can be sent out "without a character being printed". All of the other 223 codes will cause something to be printed. Example, <OUT 127,65> will result in the character "A" being printed. This is because ASCII CODE 65 is assigned to the character "A", and the interface processes data characters to be printed. Some printers use as many as 80 ASCII CODES to perform internal changes. For example, a Diablo Daisy Wheel printer uses ASCII CODE 79 to "SET BOLD PRINT". BUT <OUT 127,79> PRINTS a "O"! The solution to "sending printable ASCII CODES" to the printer is to first send the "ESC COMMAND".

The "ESC" code is "27". So, using the above example, <OUT 127,27> then <OUT 127,65> will command

the Diablo printer to SET BOLD PRINT. The ESC code (27) tells the printer to "Expect a CONTROL CODE NEXT". Printer manuals vary as to how their CONTROL CODES are given. Most manuals have a table of control codes with numbers given in both HEXADECIMAL and DECIMAL. A typical such expression would be given in brackets as (18,4D)H (27,77)D. The first group is given in Hex and the second group in Decimal. In this case, our TS-2068 command would be <OUT 127,27> <OUT 127,77>. Another way that the SAME command group could be presented is <ESC M>. "ESC=27 and the Character Code of "M" is 77".

Still another way given in some printer manuals is <LPRINT CHR$(27)+M>, which isn't the correct way of sending such codes with the TS-2068, but can be intrepeted as OUT 127,27:OUT 127,77. So, with all of these different ways of saying the same thing, it's no wonder that printer manuals are confusing! Incidentally, that ONE command group is used by Epson printers to SET ELITE PRINT MODE. Command codes to perform a single function may be as many as six codes chained together. Example: (27,120,1)D (155,120,1)D. The "D" for Decimal may or may not be present. That command group SETS HI QUALITY MODE for Epson printers. The command for the Aerco and Oliger CPI would be <OUT 127,27: OUT 127,120: OUT 127,1: OUT 127,155: OUT 127,120: OUT 127,1>, quite a long group of OUTs to do just one switching function!

Now its gonna get longer, because that group of six OUT commands execute in about 100 milliseconds, and the printer requires much more time than that to respond to SWITCHING commands. For Software programming lines to Command the printer, we must have a "CHECK OF THE PRINTER STATUS" routine TO SEE IF THE PRINTER IS BUSY before sending a control code. When the printer is busy it places a interrupt signal on IN PORT 127. If the printer is busy then the software must wait until the printer is READY before sending the control code. The correct way to do this with the Oliger CPI is to use the loop given in the interface manual, which is <100 IF INKEY$ #3="B" THEN GO TO 100> <102 RETURN>. Then a control code group such as (27,45) would be programmed in a line as: <50 GO SUB 100: OUT 127,27: GO SUB 100: OUT 127,45>. The line 100 will loop itself until the printer is READY, then the line 100 IF condition will be FALSE and the RETURN will allow the next OUT command to execute.

The above "INKEY$ #3" polls the IN PORT 127 for the bits used by printers to signal its status to the computer. But, this procedure requires a interface drivor that processes the INKEY #3 syntax. If you use another type of Interface you should check its manual for a PRINTER STATUS CHECK routine. The use of INKEY$ #3 returns a "Improper I/O device" report when used with some other interfaces. If you get such a report code you can turn OFF the printer and type <PRINT IN 127>. Then use that number in the status check routine. My system produces 253 when the printer is BUSY. Mr. Oliger tells me that all bits of IN PORT 127 are not not controlled the same with all models of the TS-2068. His words are quoted: "A program loop such as the example given (100 IF IN 127=253 THEN GO TO 100) (102 RETURN) should not be used and this is not how the printer interface manual instructs this to be done. This is the kind of thing that works with one computer but not on another, because all of the bits on IN PORT 127d are not used, and thus are floating. The function INKEY$ #3 should be used for this purpose as detailed on page 6 of the Oliger Interface manual."

Pardon me for digressing into the complicated. This is supposed to be a SIMPLE treatsie about how to clear the fog in printer manuals and CONTROL your printer with program lines. We will get back to that. Other interfaces such as TASMAN and A&J use LPRINT CHR$ instead of OUT 127. Many printer manuals express their EXAMPLE commands in this manner, LPRINT CHR$ 27, as the ESC command, instead of OUT 127,27. Thats alright if you know how to intrepet such red herrings. The Oliger and Aerco interfaces just wont work with LPRINT CHR$, and must have OUT 127,number.

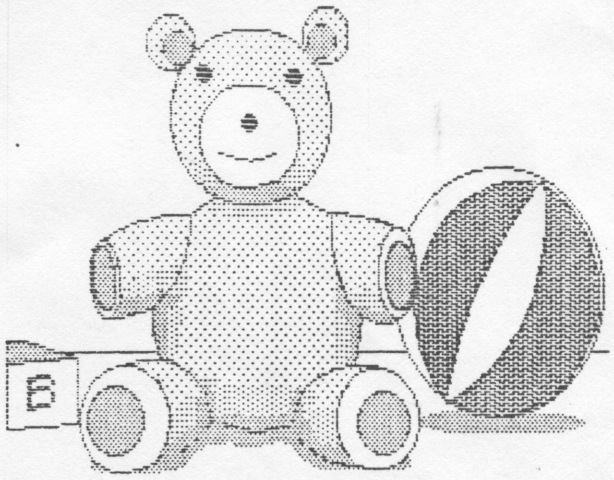
To sum up: When ESC is given, it means OUT 127,27. When a letter character is given as a command code, look up the ASCII code for the letter on page 239 of the TS-2068 User Manual and use the CODE number as the command. When constructing program lines to Command the Printor, each OUT 127 should be preceeded with <GO SUB> to the "STATUS CHECK" routine, which for the Oliger and Aerco CPI is <100 IF INKEY$ #3="B" THEN GO TO 100> then a following line <102 RETURN>. The line numbers can be of your choosing. There is no limit as to the number of "chained commands" that can be in one program line. Many printers require as many as six chained commands to perform one function change of the printer.

You cannot use HEXIDECIMAL numbers in your OUT 127 command. HEX numbers must be converted to decimal, if not given in the printer manual. Page 239 of the TS-2068 User manual gives the codes in both Hex and Decimal. Printer control sequences given in a printer manual, such as: (ESC * 0 2) must be intrepeted by looking up the codes for "*" (42), for "0" (79), for "2", (50). We know that ESC is 27. So, the chained commands would be entered in a program line as follows: <500 GO SUB 100: OUT 127,42: GO SUB 100: OUT 127,79: GO SUB 100: OUT 127,50: RETURN >. GO SUB 100 would be to the INKEY$ #3 routine to check the printer status.

Your printer and the software can both be OK,

but all you get is partial lines of print that lap over onto the next line, because of improper printer switch settings. Most softwares completely control the printer and require that no MARGINS be set at the printer, the auto PAGE ADVANCE be turned OFF, the printer LINE JUSTIFICATION be turned OFF, the PORPORTIONAL PRINT PRINT SPACING be turned OFF, and for letter size pages, the LINES PER PAGE setting at the printer should be 60 lines per page. Then the software and the printer wont be fighting each other to control margins, character spacing, and page length. Let the software do the controlling, and let the printer be DUMB, just responding to "Simon Sez" commands given by the software.

The printer switch that sets a LINE FEED with each CARRIAGE RETURN should be ON. Then a line feed will occur each time a line is printed. A Carriage Return command is sent by the sotware each time a line has printed, or the "partial last line" of a paragraph. Now this just about sums up "overything that anyone will ever need to know about Commanding printers with the Oliger and Aerco CP Interfaces". Next issue we will discuss a RS-232 Serial Interface. In the meantime perhaps someone would like to send in a treatsie about "printer commanding with the TASMAN CPI. Permission is hereby given for TSUG Clubs to make re-prints of this article or excerpts thereof.



"Teddy Bear" by Carl Green, East Liverpool, Ohio, using ARTWORX (Novelsoft).

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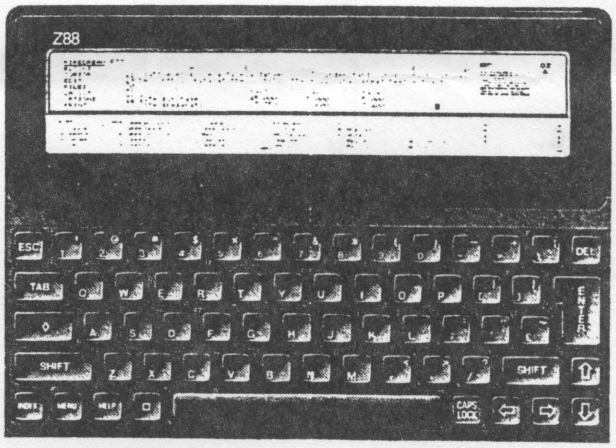

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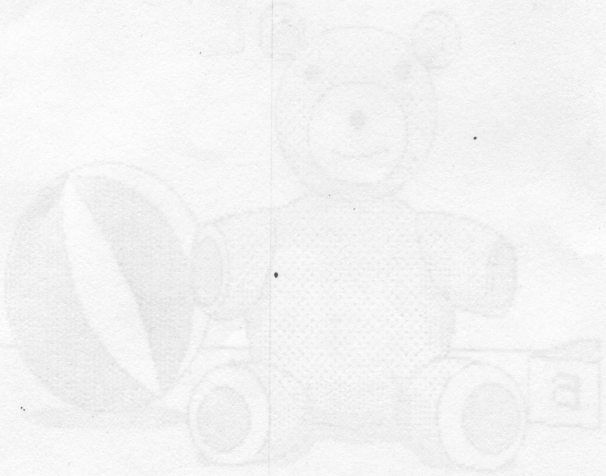

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